

What we claim is:

1. A method for inducing an enhanced therapeutically effective immune response in a subject comprising:
  - a. pretreating an area of the skin of said subject; and
  - b. applying to said pretreated area a formulation comprising:
    - 1) a therapeutically effective amount of at least one antigen,
    - 2) at least one adjuvant present in an amount effective to promote an immune response to said at least one antigen, and
    - 3) a pharmaceutically acceptable carrier to the skin of said subject,wherein said pretreated area is not perforated.
2. The method of claim 1, wherein said pretreating enhances skin penetration by said formulation.
3. The method of claim 1, wherein said carrier is a patch.
4. The method of claim 3, wherein said patch is selected from the group consisting of an occlusive dressing, a nonocclusive dressing, a hydrogel dressing and a reservoir dressing.
5. The method of claim 1, wherein said pretreating comprises swabbing said pretreated area with a swab.
6. The method of claim 5, wherein said swab is comprised of material selected from the group consisting of cotton, nylon, wool and combinations thereof.
7. The method of claim 5, wherein said swab is treated with an alcohol or a composition containing alcohol.
8. The method of claim 5, wherein said swab is treated with acetone or a composition containing acetone.

9. The method of claim 1, wherein said pretreating comprises applying a detergent or a detergent solution to said pretreated area.
10. The method of claim 5, wherein said swab is treated with a detergent or a detergent solution.
11. The method of claim 5, wherein said pretreating comprises applying a depilatory formulation, leaving said formulation on said pretreated area for a period of about 0.1 – 30 minutes.
12. The method of claim 11, wherein said period is preferably about 4 - 20 minutes.
13. The method of claim 11, wherein said period is more preferably about 12 minutes.
14. The method of claim 1, wherein said pretreating comprises applying a keratinolytic formulation, leaving said formulation on said pretreated area for a period of about 0.1 – 30 minutes.
15. The method of claim 14, wherein said keratinolytic formulation is salicylate.
16. The method of claim 14, wherein said period is about 4 - 20 minutes.
17. The method of claim 14, wherein said period is about 10 minutes.
18. The method of claim 1, wherein said pretreating comprises disrupting the surface layer of said pretreated area with a disrupting device.
19. The method of claim 18, wherein said disrupting device is selected from the group consisting of an emory board, an abrasive pad, a TB tine testing device, a gas powered gun, a microneedle device and adhesive tape.

20. The method of claim 1, wherein said adjuvant is at least one of the members selected from the group consisting of bacterial DNA, cytokines, chemokines, tumor necrosis factor alpha, genetically altered toxins, chemically conjugated toxins and lipopolysaccharides.
21. The method of claim 20, wherein said therapeutically effective immune response results in LN cell proliferation.
22. The method of claim 20 wherein said adjuvant is a combination of at least two of the adjuvants selected from the group consisting of bacterial DNA, CpG, cytokines, chemokines, tumor necrosis factor alpha, genetically altered toxins, chemically conjugated toxins and lipopolysaccharides.
23. A method for inducing an enhanced therapeutically effective immune response in a subject comprising:
- a. applying to said pretreated area a formulation comprising:
    - 1) a therapeutically effective amount of at least one antigen,
    - 2) at least one adjuvant present in an amount effective to promote an immune response to the antigen, and
    - 3) a pharmaceutically acceptable carrier to the skin of said subject,wherein said pretreated area is not perforation; and
  - b. administering a separate antigen formulation to said subject.
24. The method of claim 23, wherein said separate antigen formulation is administered at a time after said applying of said formulation to said pretreated area, wherein said separate antigen formulation provides a further immune response in said subject.
25. The method of claim 23, wherein said separate antigen formulation is administered at a time before said applying of said formulation to said pretreated area, wherein said separate antigen formulation provides a further immune response in said subject.

26. The method of claim 1, wherein said adjuvant is applied to the skin at one site on said subject and said antigen is applied to a second site on the skin on said subject and at least one of said first site and said second site is on said pretreated area.
27. The method of claim 26, wherein said application of said antigen and said adjuvant occur about simultaneously.
28. A method for inducing an enhanced therapeutically effective immune response in a subject comprising:
- a. pretreating an area of the skin of said subject;
  - b. administering an effective amount of at least one antigen; and
- administering an effective amount of at least one adjuvant, wherein at least one of said antigen and said adjuvant are administered on said pretreated area and said pretreated area is not perforated.
29. The method of claim 28, wherein said antigen is administered to said pretreated area and said adjuvant is administered by a process selected from the group consisting of intramuscular injection, oral, nasal and rectal.
30. The method of claim 28, wherein said adjuvant is administered to said pretreated area and said antigen is administered by a process selected from the group consisting of intramuscular injection, oral, nasal and rectal.
31. The method of claim 1, wherein said antigen presents on a cell surface of a Langerhans cell to a lymphocyte, thereby inducing the immune response in the organism.
32. The method of claim 1, wherein exposure to said adjuvant causes migration of the Langerhans cell to a lymph node.
33. The method of claim 1, wherein exposure to said adjuvant signals the Langerhans cell to mature into a dendritic cell.

34. The method of claim 1, wherein the antigen is derived from a source selected from the group consisting of a pathogen, a tumor cell and a normal cell.
35. The method of claim 1, wherein the antigen is derived from a pathogen selected from the group consisting of a bacteria, virus, fungus and parasite.
36. The method of claim 1, wherein the antigen is selected from the group consisting of a tumor antigen, an autoantigen, an allergen and a biological warfare agent.
37. The method of claim 1, wherein the antigen is selected from the group consisting of carbohydrate, glycolipid, glycoprotein, lipid, lipoprotein, phospholipid, and polypeptide.
38. The method of claim 1, wherein the formulation further comprises an attenuated live virus and the antigen is expressed by the attenuated live virus.
39. The method of claim 1, wherein the antigen is multivalent.
40. The method of claim 31, further comprising activating the Langerhans cell to increase major histocompatibility complex class II expression.
41. The method of claim 31, wherein the adjuvant activates the Langerhans cell.
42. The method of claim 1, wherein the adjuvant enhances antigen presentation to a lymphocyte.
43. The method of claim 1, wherein the adjuvant is an ADP-ribosylating exotoxin.
44. The method of claim 43, wherein the adjuvant is cholera toxin (CT) or cholera toxin B subunit (CTB).

45. The method of claim 43, wherein the adjuvant is *E. coli* heat-labile enterotoxin (LT) or pertussis toxin.
46. The method of claim 43, wherein the adjuvant in said formulation is provided as a nucleic acid encoding an ADP-ribosylating exotoxin.
47. The method of claim 1, wherein the antigen in the formulation is provided as a nucleic acid including a sequence encoding the antigen.
48. The method of claim 47, wherein the nucleic acid is non-integrating and non-infectious.
49. The method of claim 47, wherein the nucleic acid further includes a regulatory region operably linked to the sequence encoding the antigen.
50. The method of claim 1, wherein the formulation is a gel or emulsion or ointment.
51. The method of claim 1, wherein the formulation is applied to intact skin covering more than one draining lymph node field.
52. An article for vaccine administration comprising a patch suitable for adhesion to the skin and a vaccine formulation including at least one adjuvant, at least one antigen and a skin penetration enhancer.
53. The article of claim 52, wherein said skin penetration enhancer is selected from the group consisting of an alcohol, acetone, a detergent, a depilatory and a keratinolytic.
54. The article of claim 52, wherein said alcohol or said acetone are combined with a swab.
55. A method of treating a disease of a subject, the method comprising:

- a. pretreating an area of the skin of said subject, wherein said pretreatment enhances efficacy of said treatment; and
- b. applying to said pretreated area a formulation comprising:
  - 1) a therapeutically effective amount of at least one antigen,
  - 2) at least one adjuvant present in an amount effective to promote an immune response to said at least one antigen, and
  - 3) a pharmaceutically acceptable carrier to the skin of said subject,wherein said pretreated area is not perforated.

56. A method of preventing a disease of a subject, the method comprising:

- a. pretreating an area of the skin of said subject, wherein said pretreatment enhances efficacy of said preventing; and
- b. applying to said pretreated area a formulation comprising:
  - 1) a therapeutically effective amount of at least one antigen,
  - 2) at least one adjuvant present in an amount effective to promote an immune response to said at least one antigen, and
  - 3) a pharmaceutically acceptable carrier to the skin of said subject,wherein said pretreated area is not perforated.

57. A method of protecting a subject from exposure to an antigen, the method comprising:

- a. pretreating an area of the skin of said subject, wherein said pretreatment enhances efficacy of said protection; and
- b. applying to said pretreated area a formulation comprising:
  - 1) a therapeutically effective amount of at least one antigen,
  - 2) at least one adjuvant present in an amount effective to promote an immune response to said at least one antigen, and
  - 3) a pharmaceutically acceptable carrier to the skin of said subject,wherein said pretreated area is not perforated.

58. A composition comprising:

- at least one antigen;
- at least one adjuvant; and,

at least one skin penetration enhancer, wherein said composition when applied to intact skin induces a immune response specific to said antigen.

59. The composition of claim 58, wherein said skin penetration enhancer is selected from the group consisting of an alcohol, acetone, a detergent, a depilatory and a keratinolytic.